

Managing Electronic Wastes Destined for Recycling

Publication WA 1473
Rev. 2010



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Why Is Electronic Waste a Concern?

Computers, computer accessories, TVs, cell phones and other electronics contain harmful materials including lead, mercury, cadmium, chromium, other heavy metals and chemical flame retardants. When landfilled, burned or illegally dumped, these chemicals can leach into soil or groundwater, where they may affect human and environmental health. Improperly handled discarded electronics may also pose health risks to workers at companies that manage the electronics.

Under the state hazardous waste rules (chs. NR 660 to 670, Wis. Adm. Code), businesses and institutions must determine if their discarded electronics (often called e-waste) are hazardous. If the e-waste is hazardous, it must be properly stored, and either recycled or managed as a hazardous waste.

In addition, beginning Sept. 1, 2010, Wisconsin's electronics recycling law bans disposal of many types of electronic devices in solid waste landfills or incinerators.

Electronic devices covered under the [ban](#) include: computers and computer peripherals; TVs; desktop printers fax machines; DVD players, VCRs and other video players (DVRs); and cell phones.

What Is the Purpose of this Document?

This document describes waste management practices for:

- individuals or businesses that collect or transport e-waste from businesses, institutions or consumers for recycling; and

Electronics Recycling Law: 2009 Wisconsin Act 50

As of Jan. 1, 2010, state law requires manufacturers of certain electronic devices to collect and recycle a specified amount of electronics from Wisconsin households, K-12 public schools and Milwaukee Parental Choice Program schools each year.

The law also bans many electronics from disposal in a landfill or incinerator beginning Sept. 1, 2010.

For more information and requirements for collectors and recyclers, see the E-Cycle Wisconsin Web pages at <http://dnr.wi.gov/ecyclewisconsin>.

- repair shops that break down, or demanufacture, electronics into individual components for further recycling.

The waste management practices outlined in this document are intended to prevent releases of contaminants to the environment and to protect human health.

To encourage legitimate recycling, the DNR allows reduced regulatory requirements for individuals or businesses that collect, transport or demanufacture e-waste intended for recycling **provided** that all the applicable waste management standards listed below are followed.

Failure to follow the waste management standards below, storage of e-waste without evidence of the intent to recycle it, or improper disposal of e-waste or component parts may subject the person or business to full solid waste or hazardous waste regulation in chs. 289 and 291, Wis. Stats., and chs. NR 500 to 538 and NR 660 to 673.

Persons or businesses processing e-waste, such as crushing, shredding, or chemically or thermally treating e-waste components, also may be subject to full solid and hazardous management regulations. Applicable requirements are site- and process-specific. Any person intending to process e-waste should contact the DNR for more information, at: DNRWasteMaterials@wisconsin.gov, or by phone at: (608) 267-7521.

Please be aware that individuals or businesses conducting illegal activities may be subject to civil or criminal prosecution.

Waste Management Practices for Persons Managing E-Waste

Transportation

E-waste transportation requirements apply to persons collecting e-waste and transporting it to a site for consolidation, demanufacturing or other processing. In general, the DNR does not require any solid waste or hazardous waste transportation license to transport e-waste that is destined to be recycled, provided that the safe handling and management standards below are followed:

- Comply with all applicable U.S. Department of Transportation regulations. For more information on DOT requirements, call (800) 467-4922.
- Clean up and dispose of spill residue promptly and appropriately.
- Transport e-waste to a licensed, approved or other appropriate facility, such as a legitimate recycling facility (e.g., a facility that consolidates, disassembles or processes e-waste) or a licensed hazardous waste facility.
- Use sturdy containers during transport and handle appropriately to prevent damage during on- and off-loading. Secure waste containers during transport.

Transporters storing e-waste for more than 10 days must also follow the consolidation and storage practices below.

Consolidation and Storage

E-waste destined for recycling may be consolidated and stored by the waste generator or another person

before it is demanufactured. The following management practices apply to storage and consolidation of e-waste:

- Store e-waste in a way that protects it from the weather and from breakage.
- Store e-waste in an area that is inaccessible to the public.
- Label waste containers to identify the contents.
- Store e-waste on-site for no longer than one year.
- Train employees who handle the e-waste to prevent breakage, and how to safely clean up any breakage that occurs.

Demanufacturing or Disassembly

Demanufacturing or disassembly means to manually break down e-waste into individual component parts for resale or reuse, or to sort for further recycling. In general, persons engaged in simple demanufacturing or disassembly are not required to obtain DNR approvals or licensing.

Examples of demanufacturing or disassembly activities include the following:

- Removing **batteries** from electronics or component parts and sorting, mixing, discharging or regenerating them; and disassembling battery packs into the individual batteries or cells.
- Removing **metal and plastics** from electronics or component parts and shredding, sorting, grading, compacting or bailing them.
- Removing **fluorescent or other mercury-containing lights** from electronics or component parts.

The consolidation and storage standards listed above apply to e-waste prior to disassembly.

Some components generated by disassembly are universal wastes (e.g., nickel-cadmium or lithium batteries; fluorescent lamps; or mercury-containing lights, switches or relays). As a generator of universal waste, the demanufacturer or disassembler becomes a small or large handler of universal waste. For more information on universal waste management requirements, see ch. NR 673: <http://www.legis.state.wi.us/rsb/code/nr/nr673.pdf>

Plan Ahead

It is important to make arrangements with downstream recyclers prior to disassembling e-waste because individual recyclers may require that the waste meets certain specifications.

Processing

Processing includes activities, other than simple demanufacturing or disassembly of e-waste components, which change the chemical or physical makeup of a hazardous electronic component. Examples of processing activities include the following:

- Smelting or other thermal treatment to reclaim metals from batteries, circuit boards or other components, such as lead from cathode ray tubes (CRTs)
Note: CRTs are the video display components of some electronics, commonly found in older, non-flat panel TVs and computer monitors.
- Chemical treatment, such as precipitation, to reclaim metals.
- Shredding circuit boards, and breaking the vacuum or crushing the glass in CRTs.

Note: There are specific requirements for handling and processing cathode ray tubes. For more information, see “Managing Unwanted Electronics and Component Parts” at:

<http://dnr.wi.gov/files/pdf/pubs/wa/wa1307.pdf>.

Processing e-waste components may be treatment of hazardous waste or solid waste, and require a DNR hazardous waste or solid waste facility license. These requirements are very site- and process-specific. If you are involved with recycling activities other than simple de-manufacturing or disassembly, contact the DNR at: DNRWasteMaterials@wisconsin.gov, or by phone at: (608) 267-7521.

Summary

To encourage legitimate recycling, DNR allows reduced requirements for persons transporting, consolidating, storing and demanufacturing e-waste that is destined for recycling. If individuals or

businesses do not legitimately recycle e-waste or comply with the applicable management standards above, they may be subject to full solid waste or hazardous waste management regulations, including hazardous waste facility licensing. Individuals who process e-waste by performing more than simple demanufacturing or disassembly should contact the DNR to determine how the waste management requirements apply to your operations.

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